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# Organic agriculture: the case of Turkey

K. Demiryürek, C. Stopes and A. Güzel

***Abstract:*** *Organic agriculture has grown rapidly throughout the world in recent years as a result of increasing consumer interest in healthy food and environmental concerns. The use of land in this operation helps to conserve the environment and promotes the sustainable use of natural resources. The demand for organic products has increased, especially in Europe, North America and Oceania, and hence has created export potential for developing countries. Turkey is a typical case among developing countries of the establishment of organic agriculture based on export potential. About 85% of its current organic production is exported to EU countries, and this is predicted to expand further. The main objectives of the study were to define the concept of organic agriculture and to describe the state of organic agriculture both worldwide and specifically in Turkey. The paper also describes major issues affecting Turkish organic agriculture and presents recommendations for developing this and related sectors in the hope that they will help to solve common problems faced by developing countries and improve policy programmes along with extension and research activities.*

***Keywords:*** *organic agriculture; organic food; policy; market development; Turkey*

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Organic agriculture can be seen as one approach to conferring sustainability on agricultural systems. It has its own specific principles and practices, from production at the farm level to marketing the products.

Organic agricultural practices have rapidly become commonplace, not only in developed countries, but also in many developing countries. This is mainly the result of increasing consumer health concerns and environmental interests, especially in developed countries. The market for organic products is strong, especially in Europe, North America and Oceania, but demand for organic products that cannot be grown in developed countries has resulted in the development of international trade in organic food and has led to developing countries such as Turkey, which has suitable ecological conditions, becoming a producer and exporter of organic products and foods to developed countries.

The main objectives of this paper are to analyse the concept of organic agriculture, to present the situation with regard to organic agriculture around the world, to examine major issues affecting Turkish organic agriculture and to offer suggestions on developing organic agriculture.

Although Turkey has its own specific conditions in terms of the development of organic agriculture, it provides a typical example of a developing country in the world organic market and its experience can be used for defining and improving policy programmes, market development, exports, extension services and research activities in other similar countries.

## Definition of organic agriculture

The US Department of Agriculture (USDA) has framed a technical, but useful definition of organic agriculture:

> 'Organic agriculture is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives. To the maximum extent

> feasible, organic farming systems rely on crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, and aspects of biologic pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests.' (USDA, 1980)

However, Lampkin (1990) emphasizes the sustainability advantages of organic agriculture and defines it as an approach to agriculture that aims to create integrated, environmentally, socially and economically sustainable systems. Reliance on external inputs, whether chemical or organic, is reduced as far as possible.

A farm is perceived as a living organism in organic agriculture, with its parts (the soil, organic matter, climate, plants, animals and farmer) interacting to create the whole (Lampkin, 1990). Hence, organic agriculture refers to whole approaches to production rather than the type of input used and whether this is restricted or allowed. However, the avoidance of soluble inorganic fertilizers and synthetic pesticides has been used in practice to differentiate organic farming from other sustainable farming systems. The major distinctive factor is the existence of both legislated and voluntary standards and certification procedures (especially for marketing purposes) in organic agriculture (Tate, 1994; Lampkin, 1996).

These definitions of organic agriculture mainly reflect four concepts. First, they imply restrictions on the use of readily soluble chemicals such as fertilizers, pesticides, plant growth regulators and animal hormones. Second, organic agriculture is based on specific production techniques such as the use of crop rotation, crop residues, animal manure, and biological and mechanical pest, disease and weed control. Third, the definitions concern the aims of organic agriculture, which include maintaining soil fertility, producing consumer preference products and encouraging nutrient cycles between soil, plant, animal and farming systems. Finally, organic agricultural production and marketing constitute a traceable process that has its own international regulations, and the organic products have to be registered, controlled and certified by independent inspection and certification institutions at all stages of this process (Demiryürek, 2000).

## Development of organic agriculture worldwide

Organic agriculture first developed in European countries and the USA, and later expanded to other countries. The wider interest in organic agriculture has been influenced by factors such as concerns over the environment, health and socioeconomic conditions. Consumer demand for organic products has led to an increase in the number of farmers who have adopted organic agriculture. The growing demand for organic products has also led to the development of international trade. Countries, which in some cases have no internal demand, but have a favourable climate for farming organic products that cannot be grown in Europe, are producing for the export market.

Organic agriculture is currently practised in about 120 countries throughout the world and the area under organic management is continually increasing. According to global organic farming statistics compiled by the Research Institute of Organic Agriculture (Willer *et al*, 2007), almost 31.5 million hectares of land worldwide are managed organically. The major part of this area is located in Australia (11.8 million hectares), Argentina (3.1 million hectares), China (2.3 million hectares), the USA (1.6 million hectares) and Italy (about 1 million hectares). Probably less than half of the global organic land area is dedicated to arable land, since in Australia, Argentina, China and Chile, most of it is used as extensive grazing land. In these countries, dry land conditions are used as large-scale extensive livestock systems. Oceania covers 39% of the total organic area; Europe, 23%; Latin America, 19%; Asia, 9%; North America, 7%; and Africa, 3%. Globally, there are about 633,891 farms under organic management, constituting about 0.7% of all agricultural land. Organic farms are found in Europe (30%), Latin America (28%), Asia (20%), Africa (20%) and North America (2%) (Willer and Yussefi, 2007; Yussefi and Willer, 2007; Willer, Yussefi and Sthamer, 2007). In the enlarged EU with 27 members, there are 179,322 organic farms on 6,821,131 hectares of organic area, which corresponds to about 4% of the total agricultural land and 1.2% of farms in the EU (FiBL, 2007).

The major markets for organic agricultural and food products are in Western Europe (52%) and North America (45%) (Sahota, 2005). The world retail market has rapidly grown by 131%, reaching US$21.5 million between 1996 and 2000 (ITC, 2003). About 1–4% of total world food sales are derived from organic food (Yussefi, 2003). Organic Monitor expected that world organic food sales would reach US$40 billion by 2006, following a 43% increase between 2002 and 2005 (Sahota, 2007; Willer and Yussefi, 2007).

The world's biggest organic market is in the USA, with sales of about US$12 billion in 2003. Annual growth rates are between 15 and 20% (Yussefi, 2003) and sales were estimated to have reached US$14.9 billion in 2005 (Sahota, 2007). Wier and Calverley (2002) indicated that the market potential for organic foods in Europe was very high indeed, being valued at a total US$10.5 billion for organic food and drink sales in 2002 and reaching 13 billion in 2003. Sahota (2007) estimated the Western European market for organic food and drink at about US$17 billion. The major countries in the European organic market are Germany, the UK, France and Italy. Other important countries in the world organic market (mainly of fruit and vegetables) are Japan (US$750 million) and Australia (US$300 million) (Sahota, 2007; Willer and Yussefi, 2007). However, organic dairy and meat products have recently gained in importance, especially in Western Europe and North America.

Several developments are likely to have a positive effect on the organic trade worldwide. Domestic markets are growing significantly in many developing countries in line with export sales; new organic products continue to enter the mainstream retail trade; major food manufacturers are introducing newly developed organic product lines; organic aquaculture is expanding rapidly in many countries; organic hotels and restaurants continue to flourish; organic non-food products, including textiles, are gaining market share. Many governments, international organizations, NGOs and other organizations are paying greater attention to the development of organic

agriculture and the promotion of international trade in organic products (Yussefi, 2003).

## Development of organic agriculture in Turkey

Historically, organic agriculture was developed by various founders in Europe and the USA. On the other hand, the first organic agricultural activities in Turkey were introduced into the country by certain European companies, not by the farmers themselves (Tate, 1994), mainly as a consequence of increasing demand for Turkish organic products that cannot be grown in Europe (Demiryürek, 2000). For example, organic farming was initially introduced to limited numbers of grape producers in the Aegean region. In parallel with the increase in demand from European countries, organic producers have diversified and several organic production projects have been organized throughout Turkey since the mid-1980s (Rehber and Turhan, 2002).

The organic farming model in Turkey takes the form of a farming contract between companies and organic producers. According to this contract, the farmers agree to implement the instructions of the project manager, promising not to use synthetic fertilizers or pesticides. Inspection and certification are carried out by independent inspection companies, authorized by both the Ministry of Agriculture and Rural Affairs (MARA) and the EU. The main responsibilities of the contracting companies are to buy at least some of the farmers' products as agreed, to pay a premium price for organic products, and to support the farmers. This contract requires producers to ensure that a specific quantity of products meet certain quality standards, and companies to guarantee a previously defined and agreed payment (Demiryürek, 2000).

Organic production projects have rapidly increased since 1985 in terms of both the type of products grown and the number of farmers adopting organic farming practices. They were brought to public attention as a result of the increase in demand for Turkish organic products and support from MARA, universities, research institutes and the Association of Turkish Ecological Agricultural Movement (ETO), and awareness of organic agriculture then rapidly increased (Aksoy and Altındişli, 1999; Kenanoğlu and Karahan, 2002).

Figure 1 shows that organic agriculture developed rapidly in Turkey between 1990 and 2006. The number of organic products increased more than 26-fold, the number of farmers 46-fold and the area under organic management 186 times over the same period (see also Table 1), making Turkey one of the most important countries exporting organic products to the EU. According to the SOEL-FiBL Survey (Willer *et* al, 2007), Turkey is the 33rd (out of 120) country in terms of organic area and the 16th in terms of the number of producers among all the countries involved in organic production (Willer and Yussefi, 2007). In 2006, 192,789 hectares were under organic land management or being converted (Table 1). Although this corresponds to only 0.8% of the total agricultural land in Turkey, the organic area nearly doubled, from 103,190 hectares in 2003 to 209,573 hectares in 2004.

Of the area under organic management in 2006, 48% comprised areas from which 'natural' products were collected, 47% was devoted to perennial and annual plant production and 5% remained fallow. Today the product range includes fresh fruit, vegetables (mainly for processing), legumes, field crops (cotton, wheat), medicinal crops, aromatic plants and dried fruits (apple, hazelnut, walnut, pistachio, dried figs, apricots and grapes) (Aksoy and Engiz, 2007). Organic honey production was the first organic animal product, but recently organic dairy, livestock and poultry products have rapidly appeared. But there is no organic aquaculture production yet in Turkey. Organic animal production is still low, but there has been much private sector interest and investment and it is expected that production will be increased to cover both foreign and domestic demand (Demiryürek and Güzel, 2006).

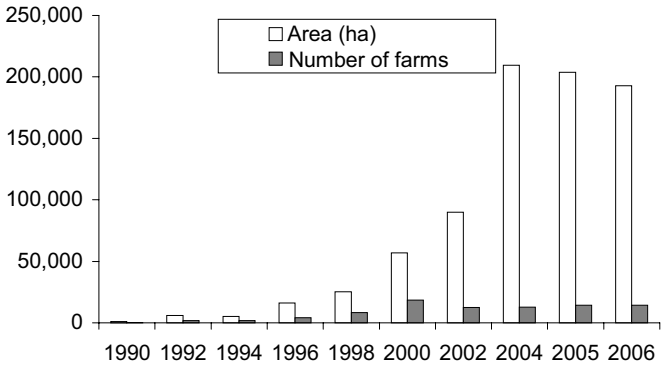


**Figure 1.** Number of organic producers and area under organic management.

There is little research on the situation regarding the domestic market for organic products. Organic products have been promoted by some supermarkets in the big cities since 1990. But high prices for organic products, a lack of awareness among customers and limited quantities of fresh organic vegetables in the market are major barriers to promoting organic products in the domestic market (Kayahan, 2001; Aksoy, 2001; Sayın *et al*, 2005). Recently, there has been increased consumer demand for organic products by the wealthy, well educated and middle-aged and those concerned about environmental

**Table 1.** Development of organic production in Turkey.

| Year | Number of organic products | Number of organic farmers | Organic area (ha) |
|---|---|---|---|
| 1990 | 8 | 313 | 1,037 |
| 1992 | 23 | 1,780 | 6,077 |
| 1994 | 20 | 1,690 | 5,196 |
| 1996 | 37 | 4,039 | 16,000 |
| 1998 | 65 | 8,302 | 25,303 |
| 2000 | 95 | 18,385 | 59,985 |
| 2001 | 98 | 15,795 | 111,324 |
| 2002 | 147 | 12,428 | 89,826 |
| 2003 | 176 | 13,044 | 103,190 |
| 2004 | 174 | 12,806 | *209,573 |
| 2005 | 205 | 14,401 | *203,811 |
| 2006 | 210 | 14,256 | *192,789 |

*Includes conversion areas.
*Source:* TÜGEM (2008).

**Table 2.** Development of Turkish organic product exports.

| Year | Value (FOB, $) |
|---|---|
| 1998 | 19,370,599 |
| 1999 | 24,563,892 |
| 2000 | 22,756,297 |
| 2001 | 27,242,407 |
| 2002 | 30,877,140 |
| 2003 | 36,932,995 |
| 2004 | 33,076,319 |
| 2005 | 26,230,259 |
| 2006 | 28,236,617 |

*Source:* TÜGEM (2008).

and health risks, especially in the big cities (Akgüngör *et al*, 1999; Sayın *et al*, 2005).

Since the majority (85%) of organic products are exported, the production pattern is shaped by the demand from foreign countries for Turkish organic products (Sayın *et al*, 2005). Table 2 shows the development of organic agricultural and food products in Turkey. Exports increased from US$19.4 million in 1998 to US$37 million in 2003, corresponding to a 91% increase in that period. However, these data do not reflect the actual exports of organic products due to the lack of record keeping on these products. It is estimated that recent exports have exceeded US$70 million. Classic agricultural export products such as dried fruits, nuts and cotton were the leading organic export products from Turkey up to the beginning of the 1990s. Now, export products can be classified into nine major groups: dried fruit, edible nuts, spices and herbs, fresh/processed fruit and vegetables, pulses, cereals, industrial crops, oilseeds and other raw/processed products. In addition, frozen fruit and vegetables and fruit-juice concentrate production and exports are now growing. Recent data show that Turkey exports organic products to 37 different countries, mainly to Germany, the Netherlands, the UK, Italy and France in the EU. Switzerland, the USA, Belgium, Denmark, Austria, Thailand, Spain, Canada, Australia, Sweden, Bulgaria, India, Japan, Slovenia and New Zealand are other developing export markets worth promoting (Güzel, 2001; Demiryürek, 2004; Kenanoğlu and Karahan, 2002; Babadoğan and Koç, 2004; Olhan *et al*, 2005; Sayın *et al*, 2005; Aksoy and Engiz, 2007). The indications are that Turkey should continue to develop its domestic market whilst promoting its products in other organic markets such as North America and Asia.

## Structure of organic agriculture in Turkey

MARA is mainly responsible for the general management and control of organic agriculture in Turkey (Figure 2). Various stakeholders from the organic agricultural sector (producers, processors, exporters, NGOs and so on) work with MARA to define priorities and national strategies for organic agriculture. In addition, MARA is responsible for the development and implementation of extension, farmer training and research activities for organic agriculture.

The current structure of MARA in relation to organic agriculture comprises different committees and members from various directorates of MARA, which are the decision-making bodies. In addition, there is one advisory committee on organic agriculture, which is composed of representatives from related governmental and non-governmental organizations that discuss national strategy, action plans and research subjects. Some of the technical staff working in the 81 provincial agricultural directorates of Turkey are also assigned duties involving organic agriculture activities.

MARA also consults the private sector, including companies, NGOs and universities, for their experience. It has organized workshops to formulate the National Strategy and Action Plan on Organic Agriculture and further project proposals. MARA staff need to be fully informed about existing regulations and standards (for example, EC Regulation No 2092/91, EUREPGAP, HACCP, etc) and it is MARA's intention to provide necessary information on how inspection companies can satisfy the requirements of international, and especially EU standards, so that organic exports to the EU from Turkey might increase.

Currently, national data relating to organic agriculture are collected by MARA through certification bodies. However, this information is based on production of fresh products and does not deal with any processed organic foods or their export. These data are handled by both the Undersecretariat for Foreign Trade and the Aegean Exports' Union. This may have resulted in conflicting production and export data in some years. MARA needs, therefore, to establish a network system dealing with the whole chain (production to consumption) of organic agriculture by cooperating with all related institutions.

According to previous and current legislation, MARA was the responsible authority. The first national regulation (2 December 1994/22145) on organic plant production, which complies with EU regulation number 2092/91, was issued in 1994. The regulation was extensively amended and revised in 2002 by the Regulation on the Principles and Application of Organic Agriculture (July 2002/24812) to include animal production and aquaculture. A framework legislation, 'Organic Farming Law', was developed and adopted by the Turkish Parliament in December 2004. The framework law provides MARA with the necessary authority to amend and update organic agriculture regulations. It also includes penalties and sanctions that were not mentioned in the previous regulations. 'The Regulation on Essentials and Implementation of Organic Farming' was also issued on 10 June 2005 and is already in force. Thus, organic agriculture has been implemented according to these two items of legislation in Turkey (Demiryürek and Bozoğlu, 2007).

Organic inspection and certification are carried out by private agencies authorized by MARA. There are currently 13 bodies, six of which are representatives of EU agencies, with the rest being Turkish ones that are not accredited according to EU requirements. However, the domestic certification bodies accredit themselves through EU agencies. Private inspection and/or certification companies can certify products as organic. However, they must be registered by MARA, receiving a permit for such activities in Turkey. A producer must apply for certification by one of these agencies. Because of the high cost of

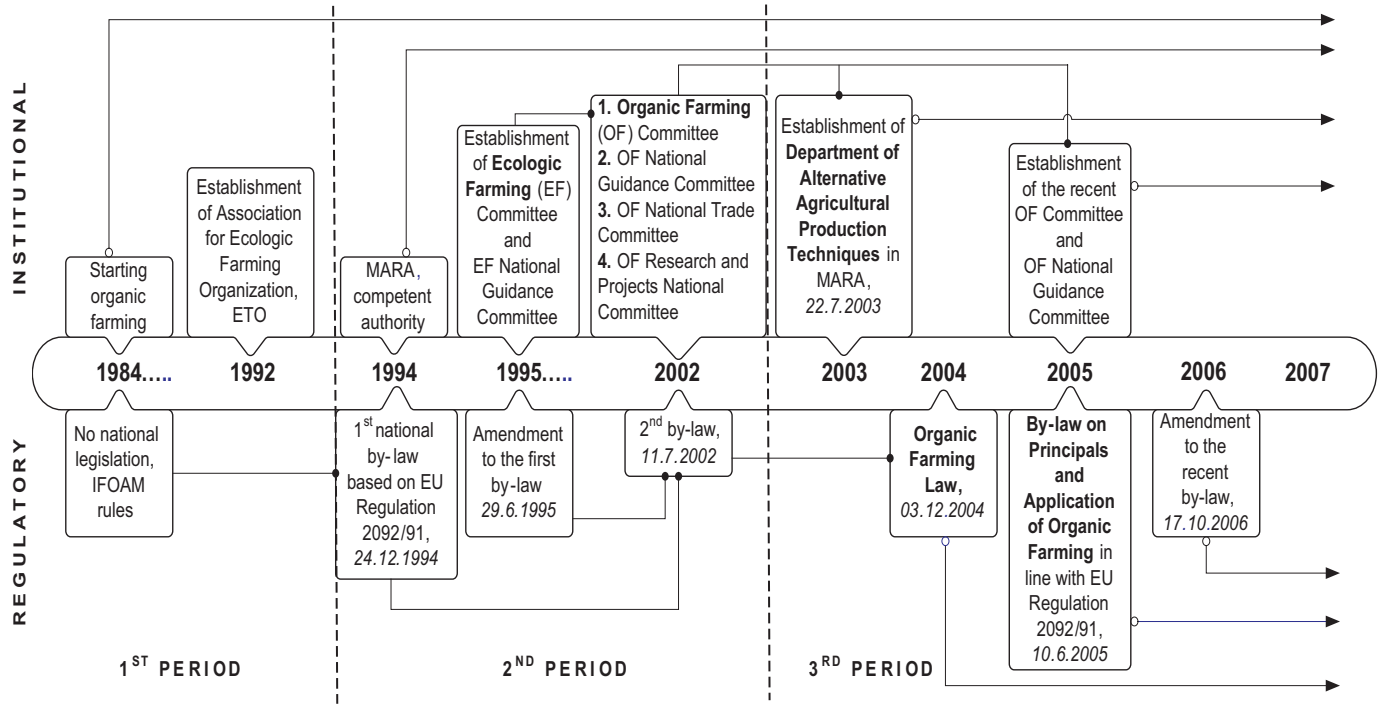


**Figure 2.** Institutional and regulatory development of organic farming in Turkey.
*Source:* Aksoy and Engiz (2007).

certification and the complexity of the paperwork, some processors and exporters have kept the required records on behalf of the farmers within their organic production project areas. The certifying companies assess the producer's compliance with the Turkish organic regulations, and product samples are taken at least twice a year, along with random visits during the production period. Appropriate products are certified as organic.

## EU project on Organic Agriculture for Turkey

The project on 'Organic Agriculture for Turkey' was funded by the EU and implemented by an international consortium for MARA between June 2006 and November 2007. The project was concerned with policy development, capacity and institutional building, and training. The overall objective was to enhance sustainable development of organic agriculture and related sectors in accordance with the EU requirement. Specifically, the project had five tasks. These included the alignment of Turkish organic agriculture legislation with that of the EU; strengthening the capacity of MARA as regards supervision, promotion and extension of organic agriculture; implementation of an efficient control and certification system; and exchange of organic farming information between farmers and other related stakeholders. One of the important tasks of this project was to set up Farmer Field Schools in five pilot project areas, to be used as a model to replicate this work in other parts of the country in the future. The project contributed to the institutional support, development and promotion of the organic sector in Turkey (Stopes, 2007; Cozens, 2007).

## Istanbul Municipality Organic Agriculture Project

Recently, the bread factory (Istanbul Halk Ekmek, IHE) started a comprehensive social responsibility project, which aims to reach small and poor farmers in eastern Turkey. In 2006, IHE contracted these farmers to produce organic wheat, make bread and sell it to the relatively wealthier consumers in Istanbul, in the hope and expectation that this would have a significant impact on poverty alleviation and rural development – but the potential benefits are multidimensional. Farmers in the project area adopt organic agricultural practices, and their incomes are increased through market guarantees and premium prices. Thus the project may limit the drift from the land, help the development of domestic markets and hence persuade other producers to farm organically (Güzel and Demiryürek, 2007b).

## Conclusion and suggestions

Rich biological diversity, species that are resistant to diseases and low input use are the main advantages of organic agricultural production in developing countries, including Turkey. Hence, Turkey has great potential due to its geographic and topographic structure, diverse climate and ecological conditions suitable for various crops (apart from some tropical fruits). Furthermore, Turkey's agricultural system is extensive and uses small amounts of agrochemicals compared with developed countries. For that reason, there is no dense chemical pollution of Turkey's agricultural land, and conversion to organic farming can be relatively easy. Therefore, Turkey and other developing countries can avoid the damage to

their environments that many developed countries have suffered. With the support of extension and training activities, the progress of organic agriculture will be accelerated (Demiryürek, 2004; Olhan *et al*, 2005; Sayın *et al*, 2005; Güzel and Demiryürek, 2007a; Stopes, 2007).

Although the export of Turkish organic products has recently increased, its share in the world organic retail market is still only about 0.17% despite the rapid growth of the market for organic products, especially in the EU and North America, where the supply of organic products cannot meet the demand. This market is potentially therefore a good opportunity for developing countries where the ecological conditions and infrastructure are suitable for organic production. Organic products such as dried fruits, nuts and field crops have typically been exported without processing, which represents a loss in export value.

If organic agriculture is to grow in a developing country, governments should focus not only on export markets, but also on domestic consumption and how it can be stimulated. The domestic market for organic products (estimated at about US$14 million) is still very limited (Stopes, 2007), with low annual expansion projected (Sayın *et al*, 2005) due to lack of consumer awareness, promotion activities, infrastructure, regulation issues, and high prices. But consumers have also sometimes been misled, with uncertified products being sold in the domestic market.

In addition to these shortcomings, there has been limited support for organic producers in terms of credit from public institutions, and training and extension activities for farmers on organic agriculture have been lacking from both public and private institutions. There is also a shortage of cooperation and information networks between public and private institutions and NGOs. Farmers' organizations for organic production have been limited in their support. Research and development activities by public and private institutions on organic agriculture are limited, although universities and research institutes have recently started some research and training activities.

Government should encourage producers' unions, private companies and NGOs to persuade suitable farmers to convert to organic production through financial incentives such as low-rate credits, premium prices, cheap organic inputs and market guarantees. It should support farmers' organizations through research, training and extension activities. Pilot projects by relevant public and private organizations should be encouraged – where the ecology and infrastructure are suitable for organic production – in order to stimulate adoption and extend organic agriculture. More emphasis should also be placed on livestock and dairy organic production in order to increase export potential in competitive world organic markets.

Local organic producer unions and marketing companies should be supported financially, and regulations for facilitating organic production should be issued so as to develop markets for organic products. Consumer awareness should be increased through public education and promotional activities.

Cooperation should be established throughout the Turkish organic agricultural sector with the help of a higher coordination body and a reliable database for organic production and exports. In order to build trust for organic products, organic project management, control and certification processes should be adapted and updated to align them with international organic farming regulations.

Organic agricultural production activities should be integrated with ecological tourism services. In addition, the production and trade of non-food organic products such as organic cosmetics, textiles, wood, paper and local handicrafts, which are produced without damaging the environment, should be promoted.

Finally, organic agriculture has multifunctional benefits that contribute to rural development and world markets, as well as protecting the environment and human health. Thus, it is a good option for Turkey and other developing countries to adopt in the further development of their agriculture.

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